



December 7, 2016

Ms. Marlene Dortch, Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street SW  
Washington, DC 20554

***Re: Reply Comments on the Proposed Rulemaking with respect to Real Time Text***

Dear Ms. Dortch:

Krown Manufacturing (“Krown”) hereby submits these reply comments on the Commission’s Notice of Proposed Rulemaking (“NPRM”) with respect to the implementation of Real Time Text (“RTT”) services.

Krown comments herein on the Commission’s efforts address transition of the wireless and wireline infrastructure to IP based telephony and the impact on the many remaining users of TTY technology. Because we share a common goal to ensure that no TTY user is left behind, Krown provides comments about the Timing of the Transition from TTY to RTT for Wireline Networks, Interoperability, Backward Compatibility, and Consumer Outreach.

For over 35 years, Krown Manufacturing has been a leading assistive technology manufacturer for products for the deaf and hard of hearing including TTYS. Krown works with many different industries worldwide to enable their customers to provide access for the deaf and hard of hearing community. In this regard, Krown has worked with many different telephone and communication systems to meet the needs of the businesses seeking to provide access as well as the needs of the deaf and hard of hearing customers served by those businesses



## **Transition from TTY to RTT for Wire-Line Networks Requires More Time**

Historically, consumer based accessibility technologies (TTY, TRS, VRS) were developed and adopted first by consumers and then later regulated by the FCC, which is an organic bottom up progression. The transition from TTY to RTT takes a different path in that it is a top down approach, and the potential for confusion is great. RTT was not developed in response to consumer demand, but rather in response to a need to adapt to evolving telephony wireless and wireline infrastructure.

New competing universal messaging technologies continue to be enjoyed and are being widely adopted by consumers such as: iOS 10 TTY which provides users the capability to make or receive TTY calls on an Apple iPhone; popular video apps; other messaging apps which rely on wireless data plans; and traditional and simple SMS (text-to-911). RTT may or may not be the communication method that consumers choose or prefer, especially if consumers prefer the opportunity to edit text communications prior to sending the text when it is complete.

To ensure that no TTY user is left behind, Krown suggests that rule-making should not be finalized on transition to RTT for wireline users until there has been much greater education, involvement and input via comment from stakeholders such as consumers, state TRS regulators (NASRA & TEDPA), TRS providers, and the telephone industry, and the business community.

The vastly complex wireline network today includes a patchwork of analog and VoIP infrastructure with a wide array of end user CPE. These conditions present many opportunities for failure that need to be fully addressed and thoroughly tested before a reliable and robust wireline transition can be undertaken in a coordinated and successful fashion.

Additionally, the use of RTT technology on wirelines will require the development of affordable external equipment. Development of such equipment will vary from industry to industry depending on the needs of the business and the consumer. Such development will require comprehensive consumer and industry input and capital outlays. Adoption of such equipment by businesses will vary by industry.

Krown does not believe the target date of 2020 is a reasonable date for the proposed transition of TTY to RTT for the wireline network. Consequently, Krown strongly recommends that TTY protocols remain in place for the next 15 years to avoid leaving behind any TTY user. TTY access should remain until such time as the



Commission has confirmed that VoIP technology has been ubiquitously deployed across all regions the United States for all users of the public switched telephone networks.

It appears that based on the limited number of comments filed to date with the FCC specific to wireline RTT usage, many of the entities mandated to comply with DOJ guidelines for communication access are not aware of or have not yet seen any information related to affordable wireline RTT. Krown believes it is essential that any wireline RTT solutions be both consumer and business friendly, as well as achieve reasonable (cost effective) and effective (robust and reliable) communication. In addition, it must and provide effective signaling and notification to consumers with proven success at reasonable cost. Any fees, usage charges, or equipment costs that would be borne by entities required to comply with a proposed RTT wireline technology solution should be fully disclosed and thoroughly vetted by comments prior to any anticipation of adoption.

### **Interoperability and Backward Compatibility**

Krown is a manufacturer and supplier of TTYs to PSAPs; local, state and federal government; and private industry entities seeking compliance with Federal Law. In this role, Krown has not been contacted by any of the related parties to test the interoperability and backward compatibility of RTT with Krown's TTY equipment and technology. We believe this is essential to ensure robust text communications and reliable compatibility. Krown is concerned that any claims of successful transcoding between RTT and TTY formats have yet to be universally demonstrated.

Moreover, Krown believes interoperability and backward compatibility are essential to avoid any complications that can arise with integrating different solutions and interfaces that could lead to widespread confusion among all consumers and place them at risk. For example, PSAPs must be able to communicate with users of either TTY or RTT technology during the transition as well as effectively address naïve consumer attempts to use text-to-911 (regardless of availability) which has already been implemented in several jurisdictions. We welcome the opportunity to test wireless and wireline RTT with Krown's TTY technology to determine if the proposed gateway solutions do indeed provide robust interoperability and reliable backward compatibility.



## Consumer Outreach

Our TTY sales experience indicates that some end users purchasing accessible communication products remain unaware of the current migration of wireless and wireline telephony infrastructure to VoIP and IP based solutions. These same users do not realize the impact this transition has on their communication options. Additionally, our customer experience has been that PSAPs and end users may not be aware of the impact of IP based telephony on TTY technology and the need for or proposed solution of RTT.

Krown attempts to support our business customers as they determine the viability of TTY solutions in their telephony environments, and it has come to Krown's attention that many users of wireline networks and CPE are often unaware of the underlying network path their telecommunications travel (analog versus IP, blended paths, etc.) outside of their own physical in-house or in-plant facilities. For these reasons, Krown believes that extensive consumer outreach is paramount to ensuring that no TTY user is left behind.

Krown believes the potential for confusion to be great among genuinely engaged and well meaning PSAPs; end users; and local, state and federal government and businesses all seeking compliance with existing laws and federal regulations. This is especially true given the recent efforts to establish text-to-911 in several jurisdictions across the nation. The introduction of a new text methodology (RTT), which has not yet been universally adopted by consumers – has the potential to be very confusing, and may not ultimately be the communication of choice by the end user.

Another rapidly growing TTY access method that has been deployed across several wireless networks is the iOS 10 TTY app which has the capability to make or receive TTY calls on an Apple iPhone. While this presents a wonderful new way to access TTYs and Relay Service, the wireless users of this service often subscribe to Data Only plans, and when using this feature, it is unclear if they are using out of plan voice minutes to enable the TTY access feature on the iPhone. This is one example of how consumers are often not aware of the cost impact of a new technology until after the technology has been utilized. These consumers have not been made familiar with the data or voice path the technology will be using on the wireless device/network. The impact on data or voice usage needs to be clear to the user prior to the service becoming widespread. This type of consumer education should be taken into consideration if the Commission decides to begin the implementation



of wireless RTT technology. Full disclosure on wireless data or voice line costs of any newly implemented accessible technology should be mandated.

For the above reasons, Krown Manufacturing respectfully requests the following:

1. The proposed target date of 2020 be changed to at least 2030 for the proposed transition of TTY to RTT for the wireline network, and strongly recommends that TTY protocols remain in place at a minimum through 2030 to ensure that no TTY user is left behind;
2. Successful transcoding between RTT and TTY formats including Krown TTYs must be universally demonstrated; and
3. To ensure that no TTY user is left behind, Krown Manufacturing encourages comprehensive and coordinated consumer and industry education, involvement and comment from stakeholders including device manufacturers be required before a rule-making can be finalized with regard to transition to RTT for wireline users.

Respectfully submitted,

Alexis Kashar  
Krown Manufacturing